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sion proposed, on account of their statistical interests, but apparently they did not consider this revision of this book the time or place to do so.

In general the book is substantially improved and although it does not blaze out any new paths, seems well adapted to the needs of those who hold to the established system of a rather careful and extensive course in college algebra before analytic geometry and calculus are begun.

R. W. BURGESS.

BROWN UNIVERSITY,
February, 1920.

Lectures on the Theory of Plane Curves delivered to Post-Graduate Students in the University of Calcutta. By SURENDRAMOHAN GANGULI. 2 parts. Calcutta, University of Calcutta, 1919. 8vo. Part 1, 10 + 1-138b pp.; Part 2, 13 + 139-350 pp. + 17 plates.

Preface: "The present volume . . . is intended as an introductory course suitable for advanced students of geometry and assumes scarcely any further knowledge of analysis on the part of the reader than is to be found in most of the ordinary text-books on differential calculus and on analytical geometry. Throughout the whole work I have endeavored to give prominence to geometrical methods, as it appears that geometry, in judicious combination with analysis, is likely to simplify otherwise tedious and lengthy investigations. With this end in view, Professor Sylvester's Theory of residuation has been introduced at the outset and occasional application of the principle has been found very useful. I have carefully avoided complicated forms of equations but at times they have been found indispensable.

In teaching the subject constant recourse has been had to the classic treatises of Salmon and Clebsch, and the works of Basset, Scott, and others, have been frequently consulted. My obligations to these authors, which are probably much greater than I am aware of, are gratefully acknowledged. I am indebted on almost every page to the great work of Salmon on *Higher Plane Curves* and it is impossible to record in detail my obligations to this inspiring writer. The English edition of the great work of Salmon has been long out of print and it has been found necessary to publish a new text-book based on modern methods, with a view to remove the inconvenience experienced by the English-knowing students of the University."

Contents—Chapter I: Introduction, 1-10; II: Theory of plane curves, 11-32; III: Singular points on curves, 33-50; IV: Polar curves, 51-65; V: Covariant curves—the hessian, 66-81; VI: Polar reciprocal curves, 82-95; VII: Foci of curves, 96-103; VIII: The analytical triangle—asymptotes, 104-125; IX: System of curves, 126-138; X: Curves of the third order—cubic curves, 139-157; XI: Harmonic properties of cubic curves, 158-168; XII: Canonical forms, 169-203; XIII: Unicursal cubics, 204-215; XIV: Special cubics, 216-231; XV: Invariants and covariants of cubic curves, 232-243; XVI: Curves of the fourth order—quartic curves, 244-266; XVII: Trinodal quartics, 267-275; XVIII: Bicircular quartics, 276-305; XIX: Circular cubics as degenerate bicircular quartics, 306-315; XX: Special quartic curves, 316-328; Appendices, 329-345.

NOTES.

In *Historical Portraits 1700-1850. The Lives by C. R. L. Fletcher. The Portraits chosen by Emery Walker* (Part I, 1780-1800, Oxford, Clarendon Press, 1919) there are portraits of Newton and Halley. "Sir Isaac Newton," 29-33; opposite page 30 is a reproduction of the painting by John Vanderbank, at Trinity College, Cambridge. Edmund Halley, 33-36; opposite page 34 is a reproduction of the painting by Thomas Murray at Queen's College, Oxford.

The opening article (16 pages) of the second volume (1920) of *Norsk Matematisk Tidsskrift*, the organ of the Norwegian Mathematical Society, is a lecture on Evariste Galois delivered by the late Ludvig Sylow.